

Project Code and Title

B.02.01.02.08 Out-of-Position Occupant Testing Using Human Cadaver Subjects

Project Objective

To identify injury mechanisms in injuries caused by air bag deployment for out-of-position (usually short stature) occupants in motor vehicle crashes.

Background

A Special Crash Investigation research program of frontal collisions showed that a relatively high incidence of residual injury of out-of-position occupants such as short stature females who sit close to the steering wheel and are thus severely impacted by air bag deployment.

Problem Definition

Review of Special Crash Investigation cases involving driver fatality due to air bag deployment suggested two mechanisms of injuries from air bag deployment:

MECHANISM 1: The driver is a small stature female who is typically unbelted and whose seat is in the forward most position. The driver in some cases may be slumping over the steering wheel due to a black out or the driver may be positioned near the steering wheel at the time of air bag deployment due to pre-impact braking or a previous minor impact.

MECHANISM 2: In general, the driver is a small stature female who is typically unbelted and whose seat is in the forward most position. However, there are cases of large male drivers who, for various reasons, are positioned close to the air bag module at the time of deployment and experience similar trauma as the small stature female drivers. The driver in some cases may be slumping over the steering wheel due to a black out or the driver may be positioned near the steering wheel at the time of air bag deployment due to pre-impact braking or a previous minor impact.

Research Approach

These injury mechanisms will be simulated in out-of-position testing with human subjects. Six static out of position cadaver tests will be conducted. The occupant positioning will be similar to that proposed by ISO.

Potential Impact/Application

The study could help to confirm the injury mechanism hypotheses set forth above for out-of-position occupants and in particular to explore whether modification in the bags aggressivity of deployment could reduce direct injury without reducing the effectiveness of the bag.

Key Milestones

- ▶ To issue a report and recommendation to the agency by September 1997.

RESOURCE REQUIREMENTS	FY 93	FY 94	FY 95	FY 96	FY97
Contract Money (\$K)			463*	540*	

* Only a small portion of this fund will be devoted to this project

Project Manager(s)

Nopporn Khaewpong

Completion Date

April 1998

Project Tasks

<u>Task</u>	<u>Title and Description</u>
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Task 1:	Develop Test Apparatus and Experimental Protocol
Task 2:	Run Preliminary Tests
Task 3:	Run Cadaver Experiments

Task	Start Date	Projected Completion Date	Status/Responsibility
1	5/96	open	In progress
2	7/96	open	In progress
3	10/96	4/97	In progress

Supporting Contracts

Task	Contract Number	COTR (phone)	Contracting Officer (phone)	Total Contract Cost (\$K)
	DTNH22-93-Y-07028	(202)366-4703	Lamont O. Norwood (202)366-8573	2700*

* Only a small portion of this fund will be devoted to this project